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DER in Virginia

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Today's Agenda

- Utility Role In DG Marketplace
- Potential Benefits of DG
- Costs of DG
- Utility Concerns



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Utility Role in DG Marketplace

Utilities As Developers

- Several utility marketing affiliates develop DG projects for commercial markets.
- DG is one option for meeting a customer's specific energy resource needs.
- Utilities have invested in emerging DG technologies.
- DTE, PECO, Alliant.

Utilities As DG Users

- Utilities have used DG applications in lieu of building traditional distribution investment and central station generators.
- This might become a burgeoning market for DG manufacturers.
- First Energy, Connectiv, ConEd, Alliant

Utilities Serve DG

- Standby/backup distribution
- Standby/backup generation
- Interconnection
- Metering and Billing



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Potential Benefits of DG

DG Economics

- Well designed combined heat and power (CHP) can be an attractive supply option to customers.
- A need for super-reliable power supplies could be met efficiently with DG.
- DG could be an efficient way to shave peak load.
- DG could be an efficient source of backup.

DG And Grid Investment

- On the utility side of the meter, the record is mixed.
- Some utilities have aggressively considered installing DG instead of enhancing wires, only to find the DG option impractical or, at best, a temporary solution.
- Other utilities have used DG successfully to enhance the system.

DG As Distribution

- The economics are not encouraging.
- One EEI member found that DG would cost 10 to 20 times as much as traditional T&D investment.
- Even without factoring in the need for DG redundancy for a level of reliability equivalent of 24 hours in 10 years, DG is not competitive in most circumstances.

DG vs. Fixed Investment

- If DG is installed strictly for the customer's commercial use, the utility avoids little fixed grid investment, if any.
- Facilities farther away from the customer might benefit from load diversity, but DG units using the same fuel will cycle on and off together.
- DG could solve one distribution problem but create others: e.g., DG could reduce line loadings but require additional system protection.

System Benefits

- DG installation may create system benefits, if the utility is in control at the critical times.
 - This could preclude the customer from using the DG when it is most needed by the customer.
- DG might address voltage support, VARS and other energy-related ancillary services, and hard-to-serve, isolated loads.



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Costs Of DG

Please Standby

- Two parts to stand-by service
 - Generation
 - largely pass-through spot market purchases or fuel expenditures.
 - Variable.
 - Delivery
 - Transmission and distribution facilities.
 - Fixed and large, especially distribution.

Standby Distribution

- The customer never completely leaves.
- To provide standby services 24/7, utilities must build as if the DG were not there: utilities will incur almost the same fixed distribution costs as if they were providing full-time service.
- Cents/kWh, or “volumetric,” rates shift fixed costs to other customers, providing an artificial subsidy to DG.
- Who pays for these shifted costs? remaining customers or utility shareholders.

Are Standby Rates A Barrier?

- No. Standby costs are the barrier.
- Standby service is like insurance.
- The costs to provide the insurance are fixed.
- Standby rates need to recover these fixed costs.
- Fixed costs are the insurance premium.
- A two-part, standby rate would be necessary.

Interconnection Costs

- Costs of studies, new facilities, and implementation.
- Utilities must study interconnection to ensure a new DG does not threaten system safety or reliability.
- Studies reveal whether a generator causes adverse impacts and, if so, which system enhancements are necessary to mitigate impacts.
- Interconnection to distribution creates special problems because the system was not built to allow two-way flow.

DG And Reliability

- In principle, multiple DG plants should be more reliable than a single large, base-load plant, but utility systems never rely on an individual plant.
- Is a single DG plant with moving parts more reliable than the fixed distribution with no moving parts?
- On-site generators could meet a customer's need for super reliability, *i.e.*, six nines.
- Without studies and/or upgrades, a proliferation of DGs might reduce reliability of individual distribution circuits.

DG Subsidies

- Current FERC interconnection proposals could require utilities to subsidize studies of DG grid impacts.
 - NARUC and utilities vigorously disagree with subsidies.
- Possible PURPA standards on standby rates would result in subsidies and cost shifting.
- Possible PURPA standards on net metering could result in DG buyback rates well in excess of avoided cost, adding new costs.



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Utility Concerns

Utility Perception Of DG

- There's a healthy skepticism.
- We've seen other new ideas promising low-cost power "too cheap to meter."
- Actual benefits maybe less than advertised.
- The costs of change maybe underestimated.
- The onus is rightly placed on the inventors to sell a new product to a skeptical public.

Artificial Policy Preferences

- Streamlined interconnection procedures.
- Presumption of no grid impact for interconnection.
- Relaxation of local air quality rules.
- Inclusion of fossil-based DG into proposed renewable portfolio standards.
- Net metering.

Environmental Concerns

- Except for pure renewables, for every kWh produced, DG plants have lower fuel efficiency and higher emissions of CO_2 , SO_x , NO_x , and PM_{10} than CCGTs.
- This includes fuel cells.
- Conclusion is based on data from the Regulatory Assistance Project.